

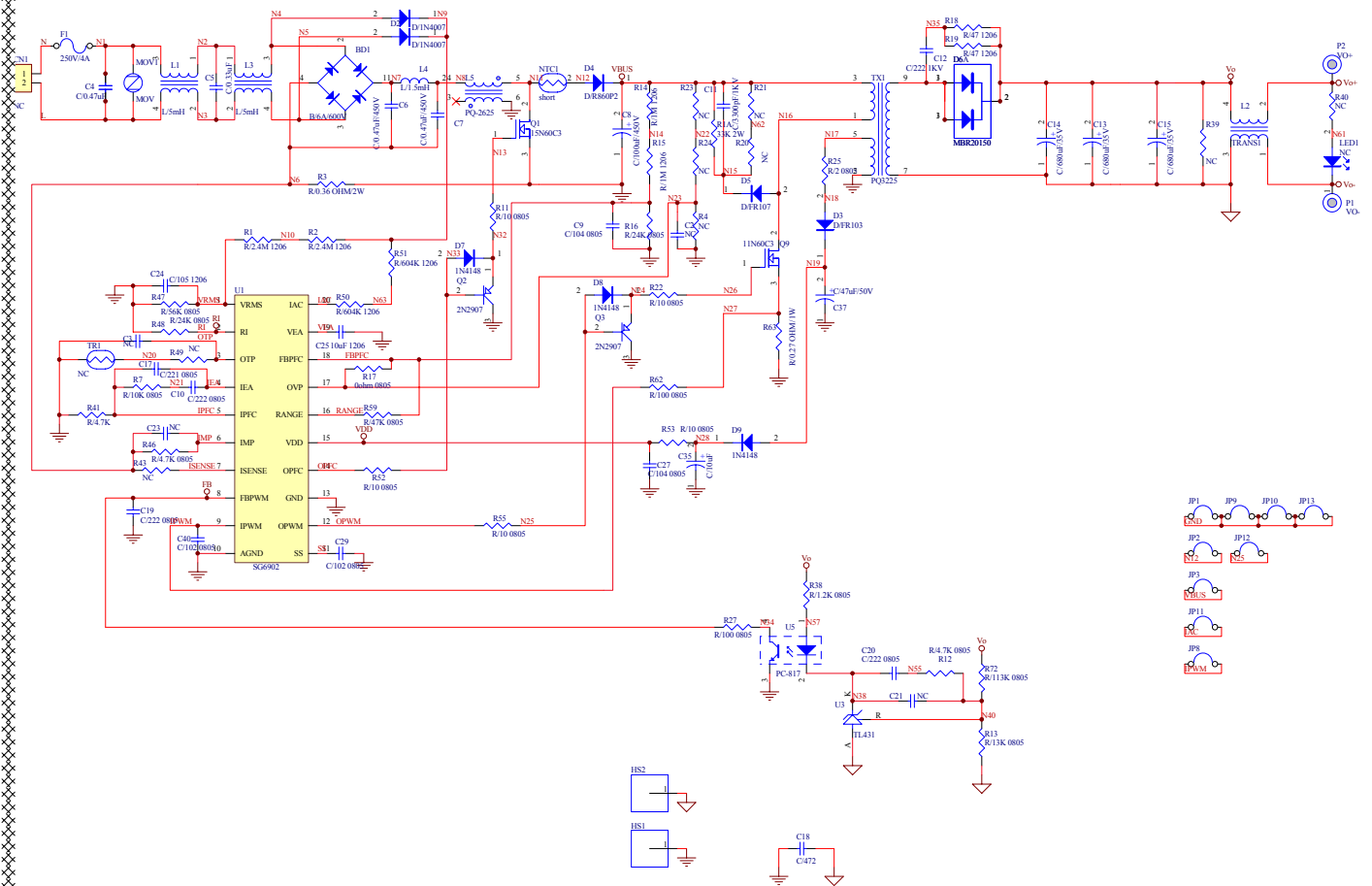
PS12024-00

SG6902 24V/5A

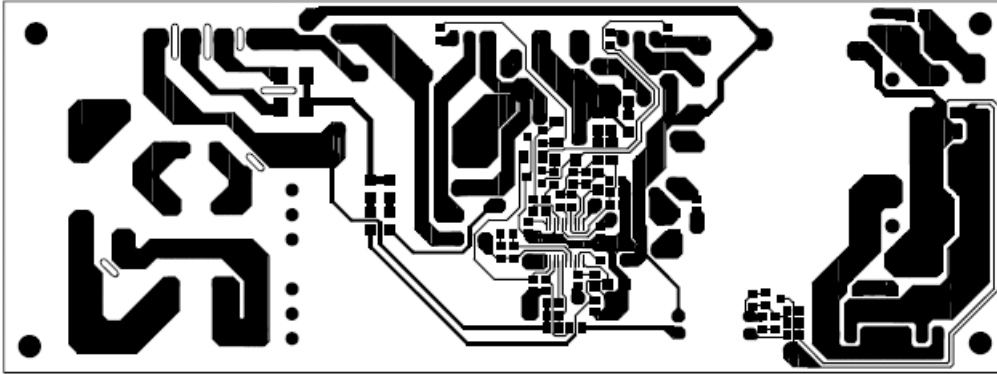
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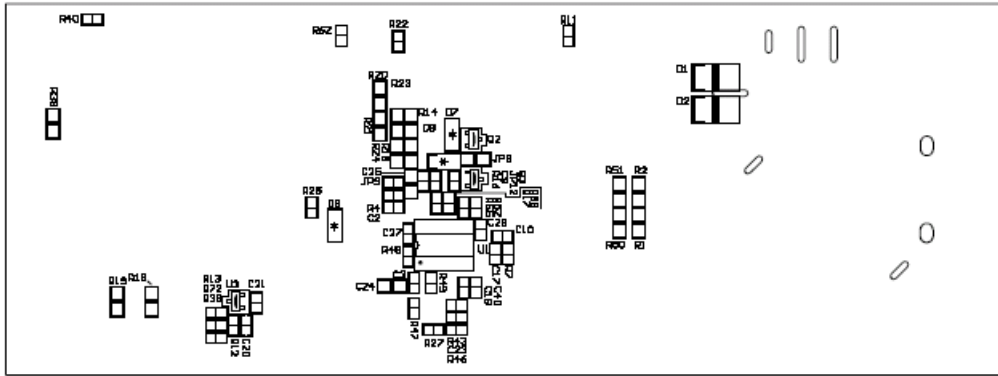
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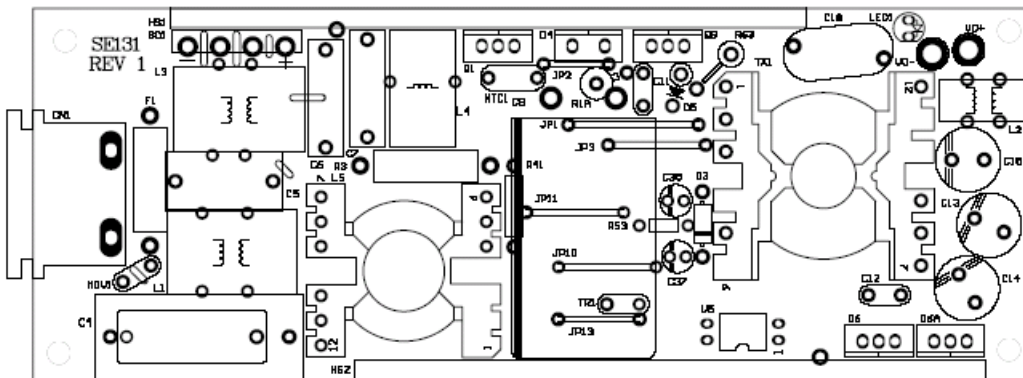
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Bottom Layer



Bottom Overlay



Top Overlay

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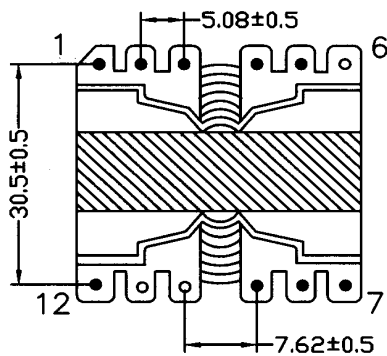
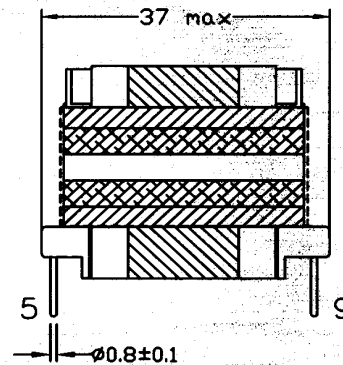
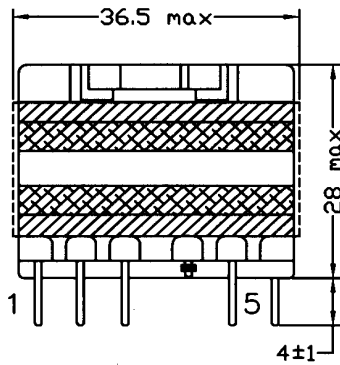
COMPONENT	Quantity	SYMBOL
JUMPER WIRE 0.8ψ(mm)	6	JP1,JP2,JP3,JP10,JP11,JP13
Jumper 1ψ*30mm	3	L3,NTC1
SMD Diode 1N4148	3	D7,D8,D9
SMD Transistor MMBT2907ALT1G	2	Q2,Q3
Metal-Oxide 2W 33KΩ+/-5%	1	R1A
1206 Y5V +80/-20% 10uF 16V	1	C25
FUSE GLASS 250V4A QUICK	1	F1
Diode GBU605 6A/600V	1	BD1
X1 Capacitor 0.47u 275V +/-20%	1	C4
MPE Capacitor 0.47u 450V ±10%	2	C6,C7
Electrolytic Capacitor 10u 50V 105	1	C35
Electrolytic Capacitor 47u 50V 85	1	C37
Ceramic Capacitor 222P 1KV +80/-20%	1	C12
MPE Capacitor 0.0033u 630V +/-10%	1	C11
Electrolytic Capacitor 100u 450V 85	1	C8
Y2 Capacitor 472P 250V +/-20%	1	C18
Electrolytic Capacitor 680uF 35V 105	3	C13,C14,C15
0805 X7R +/-10% 102P 50V	2	C29,C40
0805 X7R +/-10% 104P 50V	2	C9,C27
1206 Y5V +80/-20% 105P 50V	1	C24
SMD MLCC 0805 221P 50V +/-10%	1	C17
0805 X7R +/-10% 222P 50V	3	C10,C19,C20
SMD Diode 1N4007	2	D1,D2
Diode FR103	1	D3
Diode RHRP860 8A/600V	1	D4
Diode FR107	1	D5
Diode YG865C15RSC 20A/150V	2	D6,D6A
Varistor 7ψ470V	1	MOV1
PC817A DIP	1	U5
TRN0191 PWM Inductor PQ-3225	1	TX1
TRN0192 PFC Inductor PQ-2625	1	L5
Resistor 1W 0Ω27 +/-1%	1	R63
Resistor 2W 0Ω36 +/-1%	1	R3
SMD Resistor 0805 10KΩ+/-1%	1	R7

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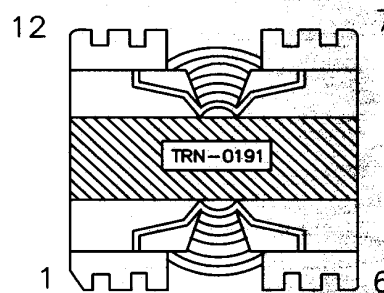
COMPONENT	Quantity	SYMBOL
SMD Resistor 0805 1K2Ω+/-5%	1	R38
SMD Resistor 1206 1MΩ+/-1%	2	R14,R15
SMD Resistor 1206 2M4Ω +/-1%	2	R1,R2
Carbom-Film Resistor 1/4W 4K7Ω+/-5%	1	R41
SMD Resistor 0805 4K7Ω+/-1%	2	R12,R46
SMD Resistor 0805 13KΩ +/-1%	1	R13
SMD Resistor 0805 24KΩ+/-5%	2	R16,R48
SMD Resistor 0805 47KΩ+/-1%	1	R59
SMD Resistor 0805 113KΩ 1%	1	R72
SMD Resistor 0805 56K2Ω+/-1%	1	R47
SMD Resistor 1206 604KΩ +-1%	2	R50,R51
SMD Resistor 0805 2Ω +/-5%	1	R25
Carbom-Filmd Resistor 1/8W 10Ω+/-5%	1	R53
SMD Resistor 0805 10Ω+/-5%	4	R11,R22,R52,R55
SMD Resistor 1206 47Ω+/-5%	2	R18,R19
SMD Resistor 0805 100Ω+/-5%	2	R27,R62
SMD Resistor 0805 0Ω+/-5%	3	R17,JP9,JP12
SMD Resistor 1206 0Ω+/-5%	1	JP8
MOSFET SPA 15N60C3	1	Q1
MOSFET SPA 11N60C3	1	Q9
SMD IC TL431 SOP	1	U3
TRN0183 Common mode choke	1	L1
TRN0004 Common mode choke	1	L2
TRN0184 Inductor	1	L4
Heat Sink(Pri) HS1	1	Q1,Q9,D4
Heat Sink(Sec) HS2	1	D6,D6A
MCH0198	3	D4,D6,D6A
SG6902RZ_C SSOP-20	1	U1
PCB for SG6902 24V/5A REV.B	1	

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1.DIMENSION : Unit : mm



Bottom view



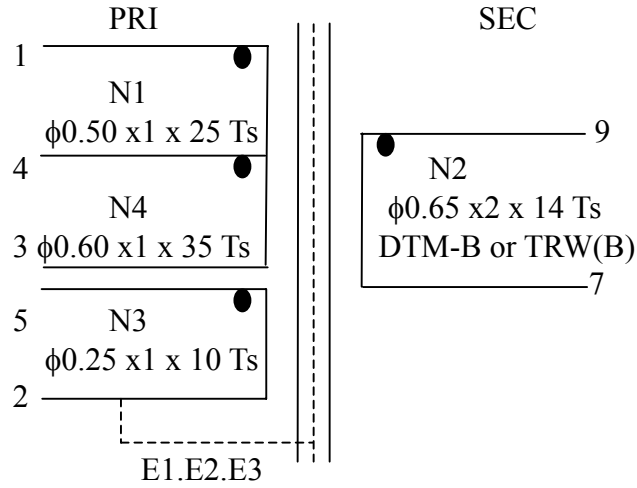
Top View

Note :

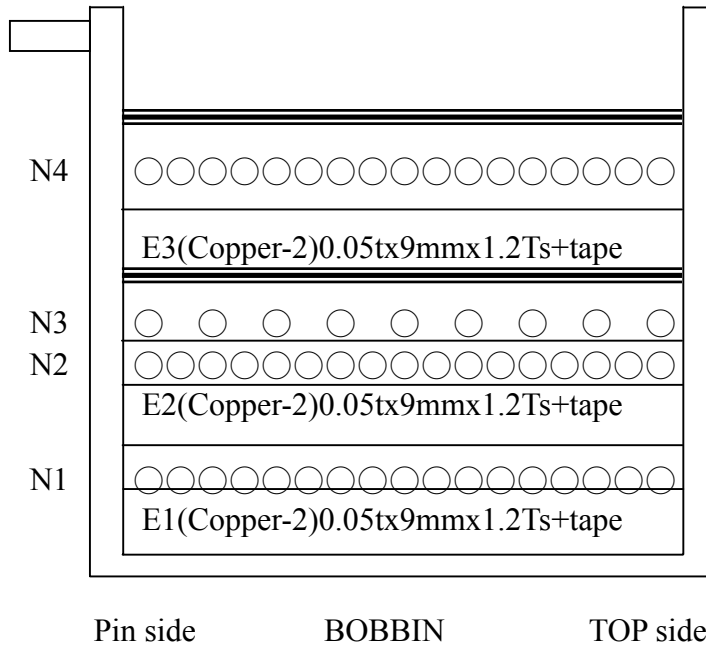
- 1.Pin 6,10,11 NO, Pin 4 cut off 1/2.
- 2.Wrapped 2Ts tape around the side of X'FMR ,before outer of copper foil: 0.05t x 9 + tape and leadwire $\phi 0.6$ to pin 2, then Tape 2Ts.

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2.SCHEMATIC :



2.1SCHEMATIC :



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3.ELECTRICAL SPECIFICATION :

3.1 Inductance test : at 1KHz ,0.25V

P(1-3) : 1.05 mH \pm 5%

3.2 DC Resistance test at 25 ° C

P(1-3) : 0.37 Ohmo max

P(9-7) : 40.6 mOhmo max

P(5-2) : 0.34 Ohmo max

3.4 Hi-pot test :

AC 1.0K V /60Hz/0.5mA hi-pot for one minute between pri to sec.

AC 0.5K V /60Hz/0.5mA hi-pot for one minute between pri to core.

AC 0.5K V /60Hz/0.5mA hi-pot for one minute between sec to core.

3.5 Insulation test :

The insulation resistance is between pri to sec and windings to core measured by DC 500V, must Be over 100 MOhm.

3.6 Terminal strength :

1.0 Kg on terminals for 30 seconds, test the breakdown.

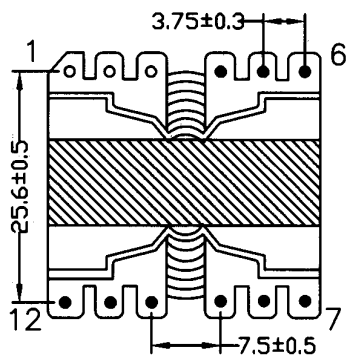
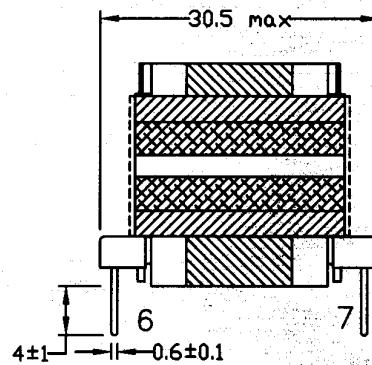
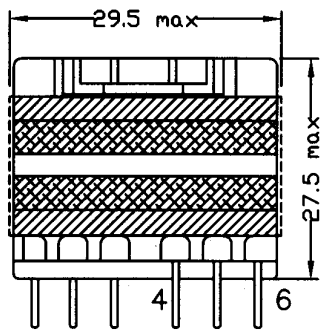
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MATERIALS LIST :

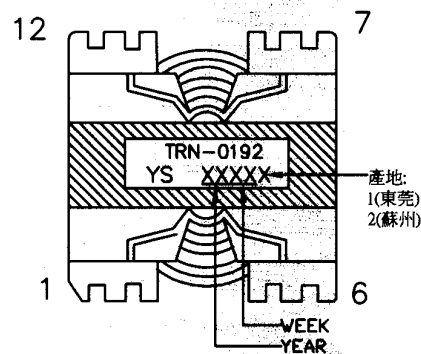
COMPONENTM	MAT'L	MANUFACTURE	FILE NO.
1.BOBBIN	Phenolic 94v-0,T375J,150°C	PQ3220 Chang Chun plastics co. ltd.	E59481(S)
2.CORE	PC44,TP4A	Ferrite core PQ3230/20 TDK,TDG.	
3.WIER	THFN-216 130°C	Ta ya eiectic wire factory.,	E197768
	UEWN/U 130°C	Pacific eiectic wire & cable co ltd.	E201757
	UEY 130°C	Chuen Yih wire co.,ltd	E174837
4.TAPE	POLYESTER 3M #1350F-1 130°C CT 130°C DTS-204 130°C	3M company.	E17385(N)
		Jingang yah un pressure sensitive glue co.,itd.	E165111
		Duck sung tape co.,itd.	E105147
5.TERMINALS	Tin-coated- Copper wire	Well Fore Special Wire corp.	
6.VARNISH	468-2FC+180°C B	PD George co/ripiey resin	E81777 (N)
	BC-359 200°C	John C Dolph co.,itd.	E51047 (M)
	BC-346A 180°C		
7.SHIELD	Copper foil	Shangai taifu coper production cable ltd. (copper foil : 0.05tx9mm+Tape)	
8.SOLDER	96.5% Su 3% Ag 0.5% Cu	Xin yuan co.,ltd.	

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1.DIMENSION : Unit : mm



Bottom view



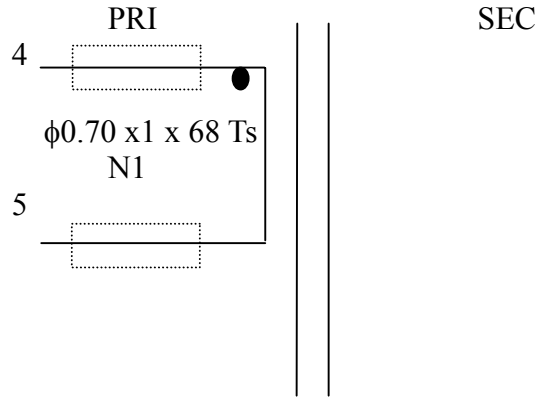
Top view

Note :

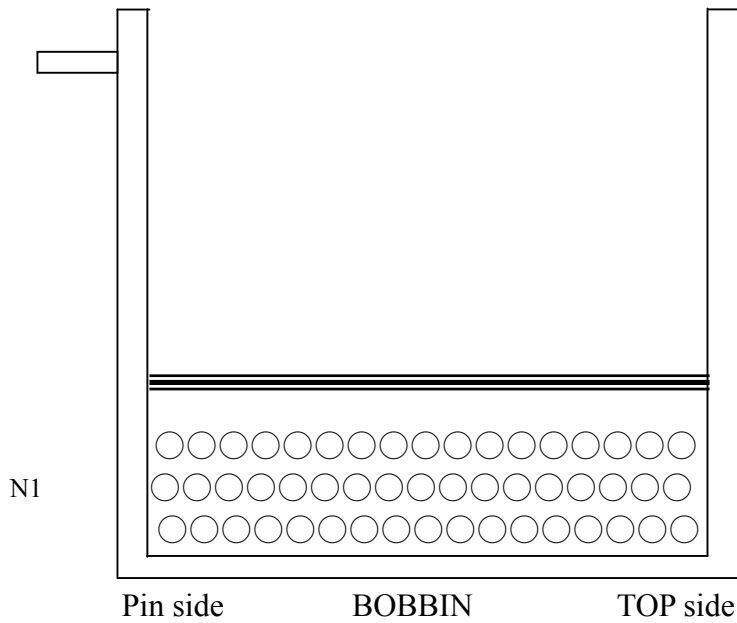
- 1.Pin 1,2,3 NO.
- 2.WRAPPED 1Ts tape around the side X'FMR ,before outer of copper foil: 0.05t x 9 + tape and leadwire $\phi 0.2$ to pin 6(with Tube),then tape 2Ts.

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2.SCHEMATIC :



2.1SCHEMATIC :



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3.ELECTRICAL SPECIFICATION :

3.1 Inductance test : at 1KHz ,0.25V

P(4-5) : 1.2 mH \pm 5%

3.2 DC Resistance test at 25 ° C

P(4-5) : 199 mOhmo max

3.4 Hi-pot test :

AC 1.0K V /60Hz/0.5mA hi-pot for one minute between pri to sec.

AC 0.5K V /60Hz/0.5mA hi-pot for one minute between pri to core.

3.5 Insulation test :

The insulation resistance is between pri to sec and windings to core measured by DC 500V, must Be over 100 MOhm.

3.6 Terminal strength :

1.0 Kg on terminals for 30 seconds, test the breakdown.

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MATERIALS LIST :

COMPONENTM	MAT'L	MANUFACTURE	FILE NO.
1.BOBBIN	Phenolic 94v-0,T375J,150°C	PQ2625 Chang Chun plastics co. ltd.	E59481(S)
2.CORE	PC44,TP4A	Ferrite core PQ2625 TDK,TDG.	
3.WIER	THFN-216 130°C	Ta ya eiectic wire factory.,	E197768
	UEWN/U 130°C	Pacific eiectic wire & cable co ltd.	E201757
	UEY 130°C	Chuen Yih wire co.,ltd	E174837
4.TAPE	POLYESTER 3M #1350F-1 130°C CT 130°C DTS-204 130°C	3M company.	E17385(N)
		Jingang yah un pressure sensitive glue co.,itd.	E165111
		Duck sung tape co.,itd.	E105147
5.TERMINALS	Tin-coated- Copper wire	Well Fore Special Wire corp.	
6.VARNISH	468-2FC+180°C B	PD George co/ripiey resin	E81777 (N)
	BC-359 200°C	John C Dolph co.,itd.	E51047 (M)
	BC-346A 180°C		
7.TUBE	TFL Tube 200°C 150V	Great holding industriat co.,ltd.	E156256 (S)
8.SHIELD	Copper foil	Shangai taifu coper production cable ltd. (copper foil : 0.05tx9mm+Tape)	
9.SOLDER	96.5% Su 3% Ag 0.5% Cu	Xin yuan co.,ltd.	

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Test model	SG6902 120W(24V/5A)
Test date	2006-01-03
Test temperature	Ambient
Test Equipment	AC source: 6220 AC POWER SOURCE Electronic load: Chroma 63030 Power meter: iDRC CP-660 Oscilloscope: LeCory 424
Test items	<ol style="list-style-type: none"> 1 Input Current 2 Input wattage at no load condition 3 Turn on time 4 DC output rising time 5 Line & load regulation 6 Efficiency 7 Output ripple & noise 8 Step response 9 Over current protection 10 Hold up time 11 Short circuit protection 12 PF&THD 13 Brownout test 14 Surge and ESD

Doc. Title	PS12024-00 Function Test Report	Institute by	SE
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1 Input current

1.1 Test condition

Measure the AC input current at maximum loading

1.2 Test result

Input Voltage	Input current (A)	Spec.
90V/60Hz	1.571A	
264V/50Hz	0.5369A	

2 Input wattage at no-load condition

2.1 Test condition

Measure the input wattage and output voltage at no load

2.2 Test result

Input Voltage	Input wattage (W)	Output voltage (V)	Spec.
90V/60Hz	0.2W	24.14V	
264V/50Hz	0.5W	24.14V	

3 Turn on time

3.1 Test condition

Set output at maximum loading. Measure the interval between AC plug-in and stable output.

3.2 Test result

Input Voltage	Turn on time (sec)	Spec.
90V/60Hz	1.06s	
264V/50Hz	0.312s	

4 DC output rising time

4.1 Test condition

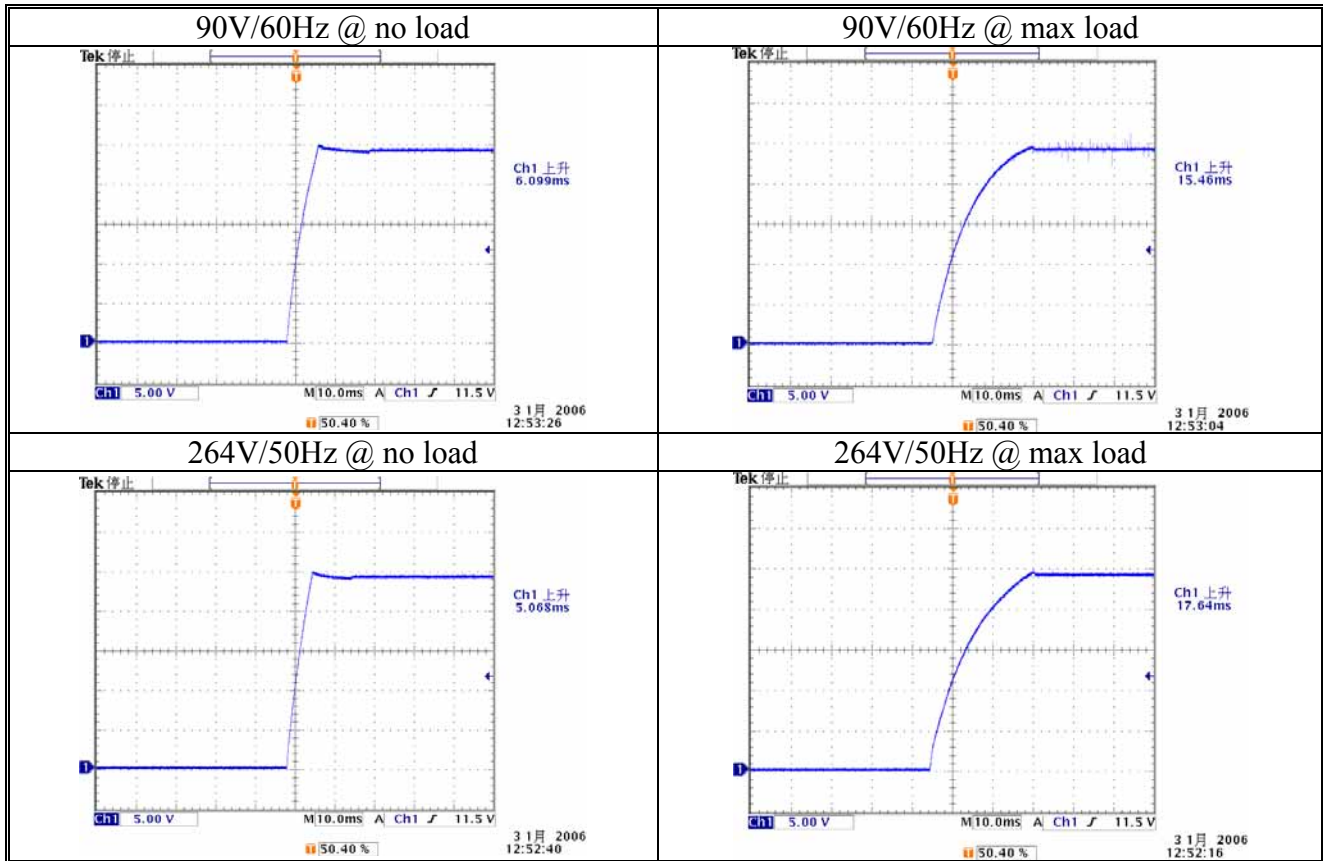
Set output at maximum loading and no loading. Measure the time interval between 10% to 90% output during startup.

4.2 Test result

Input Voltage	Max load(ms)	No load(ms)	Spec.
90V/60Hz	15.46ms	6.099ms	
264V/50Hz	17.64ms	5.064ms	

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4.3 Measured waveform



5 Line & load regulation

5.1 Test condition

Measure line & load regulation according to below table

5.2 Test result

Input Voltage	Output V at Max. load	Output V at Min. load	Load regulation(%)	Spec.
90V/60Hz	24.094V	24.144V	0.2%	
115V/60Hz	24.094V	24.144V	0.2%	
132V/60Hz	24.094V	24.144V	0.2%	
180V/50Hz	24.094V	24.144V	0.2%	
230V/50Hz	24.090V	24.144V	0.23%	
264V/50Hz	24.090V	24.144V	0.23%	
Line regulation				

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6 Efficiency

6.1 Test condition

Output at max. load

6.2 Test result

Input Voltage	Input Wattage	Output Wattage(W)	Efficiency (%)	Spec.
90V/60Hz	141.5	120.33	85.04%	> 85%
115V/60Hz	139.6	120.33	86.20%	
132V/60Hz	138.7	120.33	86.76%	
180V/50Hz	139.0	120.31	86.55%	
230V/50Hz	138.1	120.32	87.13%	
264V/50Hz	137.5	120.32	87.51%	

7 Output ripple & noise

7.1 Test condition

Ripple & noise are measured by using 20MHz bandwidth limited oscilloscope with a 10uF capacitor paralleled with a high-frequency 0.1uF capacitor across each output.

7.2 Test result

Input Voltage	Max. load(mV)	Spec.
90V/60Hz	184mV	
115V/60Hz	166mV	
230V/50Hz	138mV	
264V/50Hz	134mV	

8 Step response

8.1 Test condition

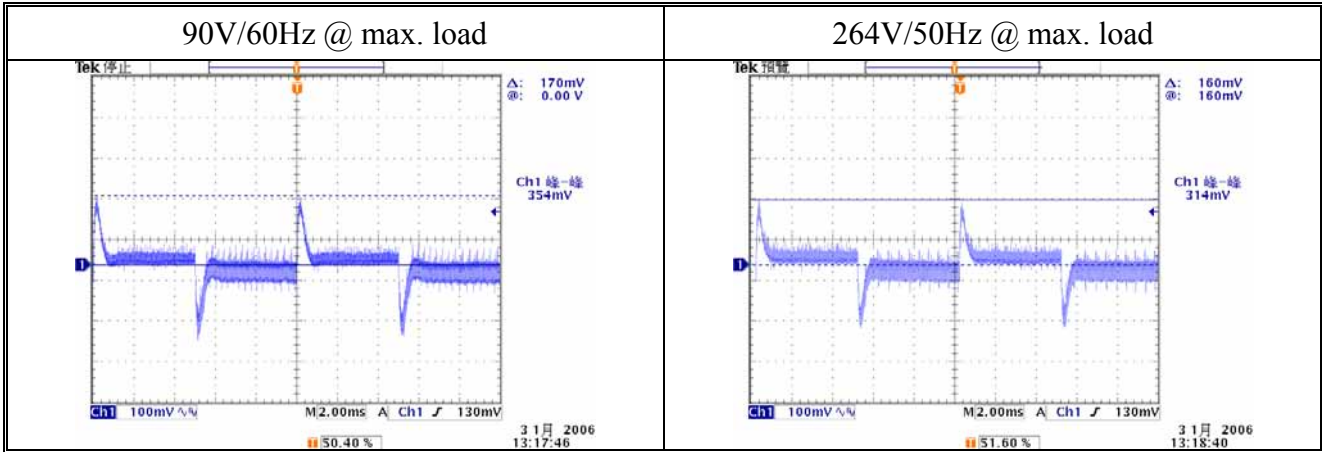
Dynamic loading (20%~80% of the full load, 5msec duty cycle, 2.5 A/usec rise/fall time)

8.2 Test result

Input Voltage	Over shoot (mV)	Under shoot (mV)	Spec.
90V/60Hz	170mV	184mV	
264V/50Hz	160mV	154mV	

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8.3 Measured waveform



9 Over Power Protection

9.1 Test condition

Increase output loading gradually.

9.2 Test result

Input Voltage	Output Power (W)	Spec
90V/60Hz	136W	
115V/60Hz	136W	
230V/50Hz	138W	
264V/50Hz	138W	

10 Hold-up time

10.1 Test condition

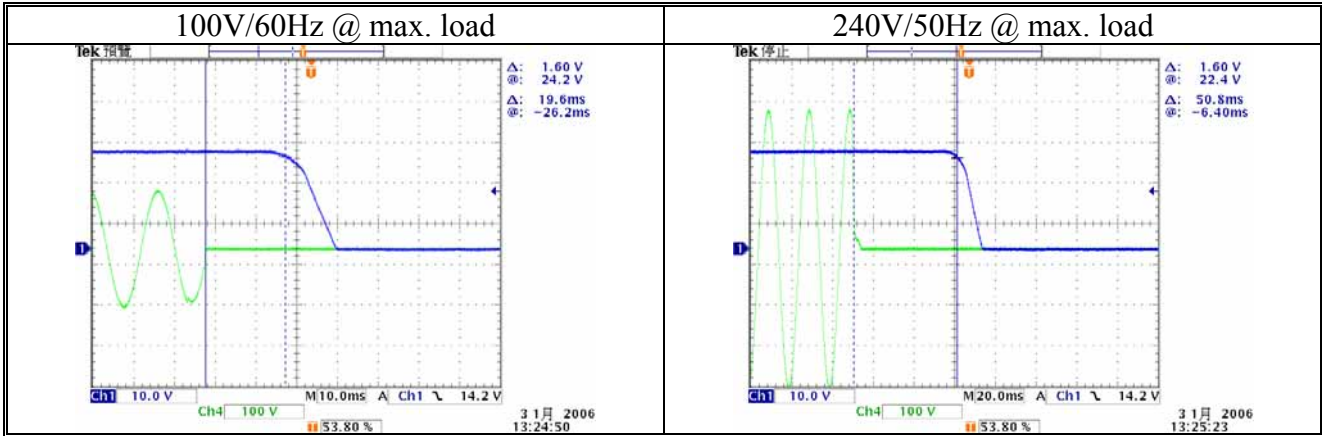
Set output at maximum load. Measure the time interval between AC off and output voltage falling to lower limit of rated value. The AC waveform should be off at zero degree.

10.2 Test result

Input Voltage	Hold-up time (mS)	Spec.
100V/60Hz	19.6ms	
240V/60Hz	50.8ms	

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Measured waveform Ch1: Vo Ch2: Vac



11 Short circuit protection

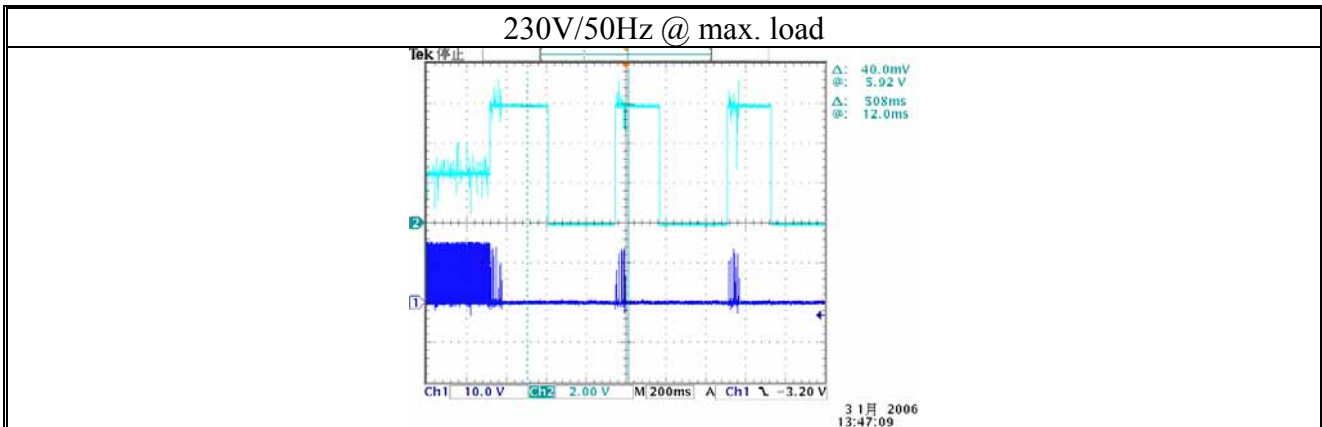
11.1 Test condition

Short the output of the power supply. The power supply should enter hiccup mode protection with less than 5W input voltage.

11.2 Test result

Input Voltage	Input wattage	Spec.
90V/60Hz	0.3W	
264V/50Hz	3.2W	

11.3 Measured waveform Ch1: OPWM Ch2: FBPWM



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12 PF & THD

12.1 Test condition

Measure input PF and THD at full load

12.2 Test result

Input Voltage	Full load		Spec
	PF	THD	
90V/60Hz	0.9994	3.092%	PF>0.95 THD<15%
132V/60Hz	0.9955	5.369%	
180V/50Hz	0.9881	7.496%	
264V/50Hz	0.9645	11.52%	

13 Brown out test

13.1 Test condition

Set output at maximum loading. Decrease input voltage with 5VAC step. Record input wattage and output voltage. After the output is off, increase the AC voltage gradually and record the recovery voltage.

13.2 Test result

Input voltage	Input Wattage (W)	Output voltage (V)	Spec
90V/60Hz	141.2W	24.084V	
85V/60Hz	142W	24.084V	
80V/60Hz	142.7W	24.084V	
75V/60Hz	0W	0V	

13.3 Test result

Recovery voltage: 80V

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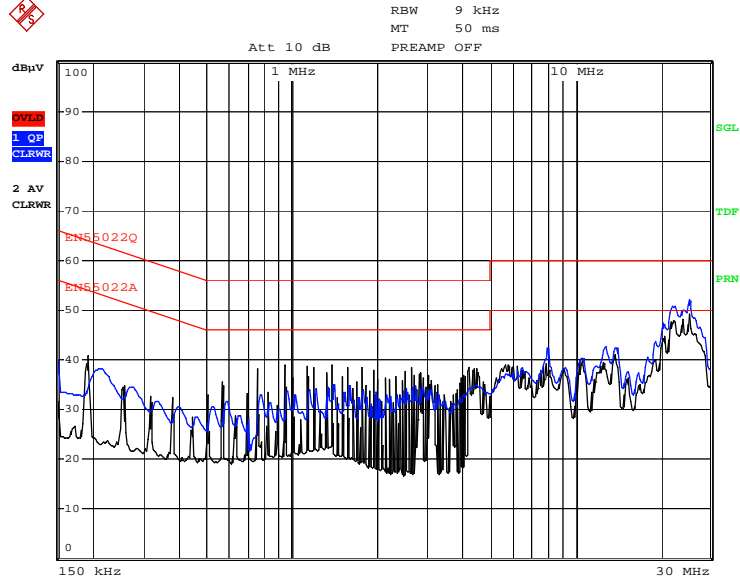
14 Surge and ESD test

Mode	Polarity	Phase	Voltage	Condition
L-N	+/-	0°	1KV	Pass
	+/-	90°		Pass
	+/-	180°		Pass
	+/-	270°		Pass
L-PE	+/-	0°	4.4KV	Pass
	+/-	90°		Pass
	+/-	180°		Pass
	+/-	270°		Pass
N-PE	+/-	0°	4.4KV	Pass
	+/-	90°		Pass
	+/-	180°		Pass
	+/-	270°		Pass

Air Discharge (15KV)		Contact Discharge (8KV)	
+16KV PASS	-16KV PASS	+8KV PASS	-8KV PASS

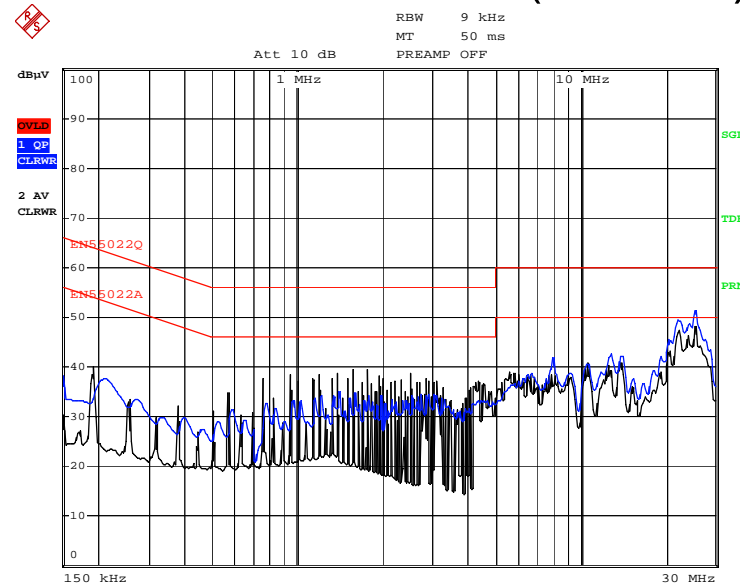
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Conduction-Line (110Vac)



Date: 10.FEB.2006 13:48:02

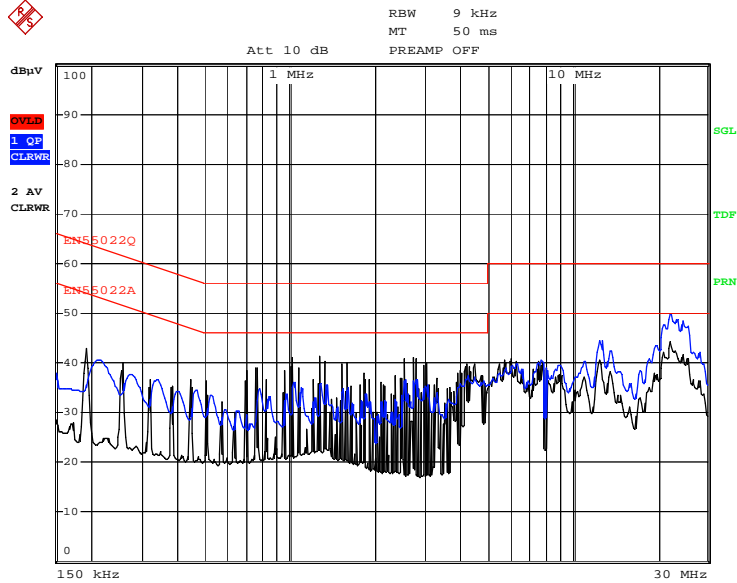
Conduction-Neutral (110Vac)



Date: 10.FEB.2006 13:38:49

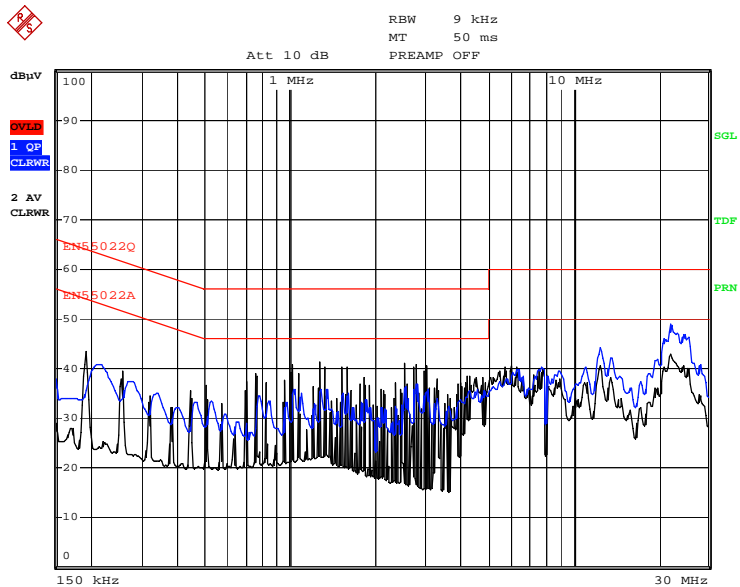
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Conduction-Line (230Vac)



Date: 10.FEB.2006 13:21:23

Conduction-Neutral (230Vac)



Date: 10.FEB.2006 13:30:13